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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,542	07/18/2005	Yasuhiko Matsushita	070759-0034	6865
20277 7590 10/19/2007 MCDERMOTT WILL & EMERY LLP 600 13TH STREET, N.W. WASHINGTON, DC 20005-3096			EXAMINER NGUYEN, JOSEPH H	
			ART UNIT	PAPER NUMBER
			2815	
			MAIL DATE	DELIVERY MODE
			10/19/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/542,542	<b>Applicant(s)</b> MATSUSHITA, YASUHIKO	
	<b>Examiner</b> Joseph Nguyen	<b>Art Unit</b> 2815	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-9 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/18/05</u> . | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Claim Objections***

Claims 5-9 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim 2. See MPEP § 608.01(n). Accordingly, the claims 5-9 have not been further treated on the merits.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uemura (US Publication No. 2002/0040982) in view of Bhat et al. (US Publication No. 2003/0025212).

Regarding claim 1, Uemura discloses in figure 3 a light emitting diode having a light emitting element (10) fixed to a lead frame (3) with a conductive adhesive material [paragraph [0057]], the light emitting element having a semiconductor layer including a light emitting layer laid on a first surface of a translucent substrate of which a second surface facing away from the first surface is used as a light emission observation surface. See paragraphs [0056] and [0057].

Uemura does not disclose an angle between a normal to the inclined surface and a crystal surface on which the light emitting layer grows is equal to an angle in which light emitted by the light emitting layer is totally reflected toward the translucent substrate. However, Bhat et al. discloses in figure 3A a light emitting diode having an angle between a normal to the inclined surface and a crystal surface on which the light emitting layer grows being equal to an angle in which light emitted by the light emitting layer being totally reflected toward the translucent substrate to minimize the loss of the emitted light in a light emitting device (paragraphs [0007] and [0016]). In view of such teaching, it would have been obvious at the time of the present invention to modify Uemura by including an angle between a normal to the inclined surface and a crystal surface on which the light emitting layer grows being equal to an angle in which light emitted by the light emitting layer being totally reflected toward the translucent substrate to minimize the loss of the emitted light in a light emitting device.

Regarding claim 7, Bhat et al. discloses in paragraph [0016] the angle is 35-55 degrees, which is in the claimed range of 40-50 degrees.

Regarding claim 8, Bhat et al. discloses in figure 3A the inclined surface is coated with an insulating film (21).

Regarding claim 9, Uemura discloses in paragraph [0047] the semiconductor layer is formed of a GaN compound.

Claims 2 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uemura and Bhat et al. in view of Kawai (US Publication No. 2001/0035580).

Regarding claim 2, Uemura and Bhat et al. together disclose substantially all the structure set forth in claim 2 except a vertical hole formed to penetrate the translucent substrate and reach the first conductivity type semiconductor layer and with a conductive material formed along the vertical hole so as to conduct the first conductivity type semiconductor layer. However, Kawai discloses in figure 14 a vertical hole 61 formed to penetrate the translucent substrate 51 and reach the first conductivity type semiconductor layer 53 and with a conductive material 62 formed along the vertical hole so as to conduct the first conductivity type semiconductor layer to form a much shorter current path and thus reduce the operation voltage of the light emitting device (paragraph [0086]). In view of such teaching, it would have been obvious at the time of the present invention to modify Uemura and Bhat et al. by including a vertical hole formed to penetrate the translucent substrate and reach the first conductivity type semiconductor layer and with a conductive material formed along the vertical hole so as to conduct the first conductivity type semiconductor layer to form a much shorter current path and thus reduce the operation voltage of the light emitting device.

Regarding claims 4-6, Uemura and Kawai disclose all the structures set forth in claims 4-6.

***Allowable Subject Matter***

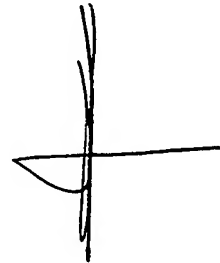
Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The reference (s) of record do not teach or suggest, either singularly or in combination at least the limitation of "an insulating member filling an opening formed in the second conductivity type semiconductor layer with a vertical hole formed above the opening so as to penetrate the translucent substrate and the first conductivity type semiconductor layer" for claim 3.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (571) 272-1734. The examiner can normally be reached on Monday-Friday, 8:30 am- 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300 for regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, consisting of a vertical line with a horizontal crossbar and a small loop at the bottom left.

Joseph Nguyen  
Patent Examiner  
October 2, 2007.

KENNETH PARKER  
SUPERVISORY PATENT EXAMINER